

WHAT IS CLAIMED IS:

1. A semiconductor device comprising a SiC substrate and an ohmic electrode,  
wherein a semiconductor member including a SiC member and a SiGe  
5 member is formed between the SiC substrate and the ohmic electrode.
2. A semiconductor device according to claim 1, wherein the semiconductor  
member is composed of a SiGe member formed on a SiC member, and the  
ohmic electrode is formed on the SiGe member.
- 10 3. A semiconductor device according to claim 1, wherein the semiconductor  
member is composed of a Si member formed on a SiC member and a SiGe  
member formed on the Si member, and the ohmic electrode is formed on the  
SiGe member.
- 15 4. A semiconductor device according to claim 1, wherein in the semiconductor  
member, a mole fraction is varied continuously from SiC to Si and from Si to  
SiGe, and the ohmic electrode is formed on the semiconductor member.
- 20 5. A semiconductor device according to claim 1, wherein the semiconductor  
member is composed of a semiconductor member in which a C mole fraction is  
decreased while a Ge mole fraction is increased continuously from SiC to SiGe,  
and the ohmic electrode is formed on the semiconductor member.
- 25 6. A semiconductor device according to claim 1, wherein the semiconductor  
member is formed on both a p-type region and an n-type region.
7. A semiconductor device according to claim 1, wherein a gate electrode is  
formed on the SiC member.
- 30 8. A semiconductor device according to claim 7, wherein the gate electrode is  
formed on a Si oxide film.
9. A method for producing a semiconductor device, comprising: forming a  
35 semiconductor member including a SiC member and a SiGe member on a SiC  
substrate by crystal growth; and forming an ohmic electrode on the  
semiconductor member.

10. A method for producing a semiconductor device according to claim 9, wherein the process of forming the semiconductor member by crystal growth includes forming a SiGe member on a SiC member by crystal growth.

5

11. A method for producing a semiconductor device according to claim 9, wherein the process of forming the semiconductor member by crystal growth includes forming a Si member on a SiC member by crystal growth; and forming a SiGe member on the Si member by crystal growth.

10

12. A method for producing a semiconductor device according to claim 9, wherein the process of forming the semiconductor member by crystal growth includes forming a semiconductor member, in which a mole fraction is varied continuously from SiC to Si and from Si to SiGe, on a SiC member by crystal growth.

15

13. A method for producing a semiconductor device according to claim 9, wherein the process of forming the semiconductor member by crystal growth includes forming a semiconductor member, in which a C mole fraction is decreased while a Ge mole fraction is increased continuously from SiC to SiGe, on a SiC member by crystal growth.

20

14. A method for producing a semiconductor device according to claim 9, wherein the semiconductor member is formed on both a p-type region and an n-type region by crystal growth.

25

15. A method for producing a semiconductor device according to claim 9, comprising forming a gate electrode on the SiC member.

30 16. A method for producing a semiconductor device according to claim 15, wherein the gate electrode is formed on a Si oxide film.